

Baton Rouge Community College

Academic Affairs Master Syllabus

Date Approved or Revised: September 18, 2007

Course Name: Fundamentals of Genetics

Course Number: BIOL 260

Lecture Hrs. 3

Credit Hrs. 3

Course Description: Focuses on the structure, replication and properties of genetic material as it relates to inheritance and molecular technologies. Inheritance and gene expression will also be examined at the population level.

Prerequisites: BIOL 120 and BIOL 120L with a grade of C or better

Co-requisites: None

Suggested Enrollment Cap: 40

Learning Outcomes: Upon successful completion of this course, the student will be able to:

- Demonstrate knowledge of genetic principles and their application in society.
- Relate an organism's genotype and phenotype and explain the role of genes in inheritance.
- Describe the basic structure of genes and chromosomes.
- Relate mitosis and meiosis to the cell cycle and inheritance.
- Differentiate the structure of DNA, RNA and proteins and identify respective functions
- Explain basic techniques used for genetic manipulation and procedures used to identify genome structure and gene function.
- Analyze the genetic structure of a population.

Assessment Measures: Assessment of all learning outcomes will be measured using the following methods:

- Individual instructor-designed exams will collectively assess all learning outcomes and will be given during the semester as listed in the course syllabus.
- An individual instructor-designed comprehensive final exam, adhering to a department-decided common content, will assess all learning outcomes and will be administered at the end of the semester.
- Individual instructor-designed assignments will assess a portion of the learning outcomes and will be given as a portion of the total grade. Assignments may include written and oral assignments, projects, homework, and quizzes. All assignments will be graded using an instructor-designed rubric.

Information to be included on the Instructors' Course Syllabi:

- **Disability Statement:** Baton Rouge Community College seeks to meet the needs of its students in many ways. See the Office of Disability Services to receive suggestions for disability statements that should be included in each syllabus.
- **Grading:** The College grading policy should be included in the course syllabus. Any special practices should also go here. This should include the instructor's and/or the department's policy for make-up work. For example in a speech course, "Speeches not given on due date will receive no grade higher than a sixty" or "Make-up work will not be accepted after the last day of class."
- **Attendance Policy:** Include the overall attendance policy of the college. Instructors may want to add additional information in individual syllabi to meet the needs of their courses.
- **General Policies:** Instructors' policy on the use of things such as beepers and cell phones and/or hand held programmable calculators should be covered in this section.
- **Cheating and Plagiarism:** This must be included in all syllabi and should include the penalties for incidents in a given class. Students should have a clear idea of what constitutes cheating in a given course.
- **Safety Concerns:** In some programs this may be a major issue. For example, "No student will be allowed in the safety lab without safety glasses." General statements such as, "Items that may be harmful to one's self or others should not be brought to class."
- **Library/ Learning Resources:** Since the development of the total person is part of our mission, assignments in the library and/or the Learning Resources Center should be included to assist students in enhancing skills and in using resources. Students should be encouraged to use the library for reading enjoyment as part of lifelong learning.

Expanded Course Outline:

I. Inheritance

- A. Mendelian Genetics
- B. The Cell Cycle
- C. Mitosis and Meiosis
- D. Chromosomes
- E. Gene Mapping

II. Molecular Genetics

- A. DNA Structure and Replication
- B. The Genetic Code
- C. Transcription
- D. Translation
- E. Mutagenesis and Mutations
- F. Genes and Proteins

III. Molecular Genetic Tools

- A. Molecular Biology Techniques and their Applications
- B. Genomics

IV. Population Genetics

- A. Hardy-Weinberg equilibrium
- B. Changes in allelic frequency